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CASE STUDY:
Twin heat pumps for large volume swimming pool

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The brief - to heat a large outdoor pool

We were asked to provide a solution for heating an extremely large 190,000L swimming pool with air source heat pump technology.

The client wanted to heat the pool water to 29°C from April to October, this was particularly difficult given it was such a large outdoor swimming pool without an enclosure, the excessive heat loss at this water temperature presented the largest challenge.

The customer was extremely keen to use heat pump technology to ensure the low running cost of heating such a large swimming pool.

Most air source heat pumps on the market are not capable of heating such large volumes of water, the limit is normally around 140,000L.

The solution - twin heat pumps

We proposed that given the space around the plant room we could use a twin heat pump solution, allowing us to increase the heat output capacity to overcome the heat loss and achieve the desired goal of heating this 190,000L swimming pool to 29°C.

Important considerations - key factors

Air flow - under normal conditions on a single heat pump set up, air flow is a critical consideration.

With a twin heat pump installation it is even more critical that good air flow is achieved, if sited too close together each heat pump will lower the ambient temperature for the other heat pump, therefore additional space is required to ensure both heat pumps work efficiently.

Flow rate - for single heat pump installations flow rate control is very simple - one bypass kit will control the flow rate for the circuit.

However with twin heat pumps the flow rate is much more difficult to control.

The Final Installation

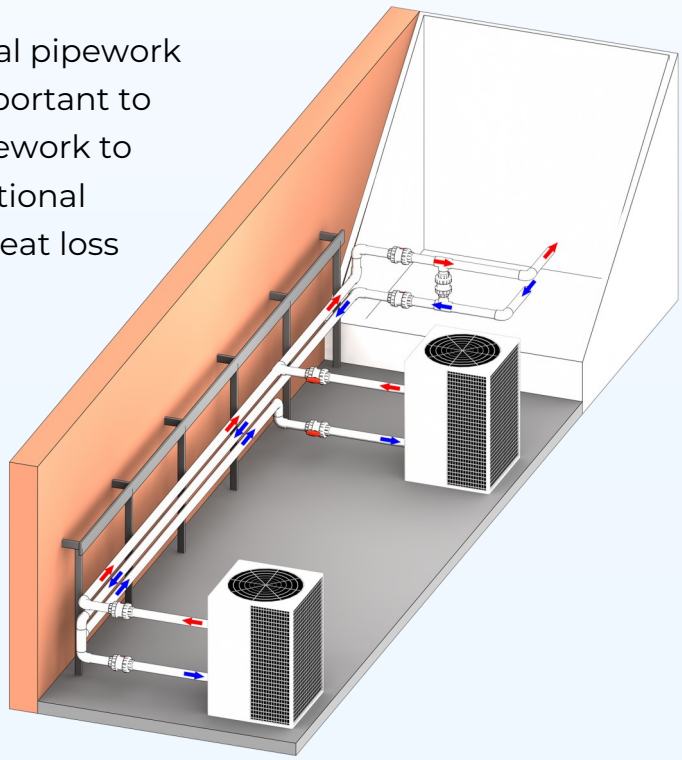
Firstly we asked the customer to extend an existing concrete pad to accommodate the two new heat pumps. This would ensure sufficient airflow in the installation area, allowing the necessary distance required between the heat pumps to enable effective heating from both units.

However the spacing created an additional problem, water will always takes the course of least resistance, effectively meaning a higher flow rate to the nearest heat pump and reduced flow to the furthest heat pump.

We solved this by designing a pipework arrangement that was equal and symmetrical in length. This also means that if the flow rate changes the flow rate will increase or decrease equally across both heat pumps.

We also ensured that each heat pump had independent isolation valves, meaning a heat pump can be taken off the filtration circuit if required, without effecting the other heat pump.

With external pipework runs it is important to insulate pipework to reduce additional unwanted heat loss



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